

WHAT IS CLAIMED IS:

1. A dispersion compensating module for compensating for a dispersion of an optical transmission line in a signal wavelength band, comprising:

5        an input end for introducing signals which propagate in said optical transmission line;

         an output end for launching the signals introduced from the input end to said optical transmission line;

         a plurality of dispersion compensators provided  
10       between said input end and said output end, each of said dispersion compensators having a dispersion of sign opposite to that of a dispersion of said optical transmission line in the signal wavelength band; and

         one or more branching optical switches provided  
15       between each of said plurality of dispersion compensators, each of said branching optical switches having a first port for inputting the signals from an adjacent dispersion compensator positioned upstream as viewed from a traveling direction of the signals, a second port for outputting the  
20       signals from said first port to an adjacent dispersion compensator positioned downstream, and a third port for conducting the signals from said first port to a branch line different from an optical path constituted by said plurality of dispersion compensators.

25       2. A dispersion compensating module according to claim 1, further comprising a control section for

controlling port switching in at least one of said branching optical switches so that the signals inputted from said first port are outputted from one of said second and third ports.

5           3. A dispersion compensating module according to claim 1, further comprising an optical output section for conducting to the output end at least one of a group of the signals which reach from the most downstream dispersion compensator positioned most downstream among said  
10 plurality of dispersion compensators as viewed in the traveling direction of the signals and a group of the signals which reach from said branch line connected to said third port of each of said branching optical switches.

15           4. A dispersion compensating module according to claim 1, wherein each of said branching optical switches includes a planar optical waveguide with one of a thermooptic element, an acousticoptic element, and a semiconductor amplifier.

20           5. A dispersion compensating module according to claim 1, further comprising an input optical switch provided between said input end and the most upstream dispersion compensator which is positioned most upstream among said plurality of dispersion compensators as viewed from the traveling direction of the signals, said input  
25 optical switch including a first port for inputting the signals from said input end, a second port for outputting

the signals from said first port to the most upstream dispersion compensator, and a third port for conducting to the signals from said first port to a branch line different from the optical path constituted by said plurality of dispersion compensators.

6. A dispersion compensating module according to claim 5, further comprising a control section for controlling port switching in at least one of said input optical switch and said branching optical switches so that the signals inputted from said first port are outputted from one of said second and third ports.

7. A dispersion compensating module according to claim 5, further comprising an optical output section for conducting to said output end at least one of a group of the signals which reach from the most downstream dispersion compensator positioned most downstream among said plurality of dispersion compensators as viewed in the traveling direction of the signals, a group of the signals which reach from said branch line connected to said third port of each of said branching optical switches, and a group of the signals from said branching line connected to said third port of said input optical switch.

8. A dispersion compensating module according to claim 5, wherein each of said input optical switch and said branching switches includes a planar optical waveguide with one of a thermooptic element, an acousticoptic element, and

a semiconductor amplifier.

9. A dispersion compensating module according to claim 1, wherein each of said plurality of dispersion compensators includes a dispersion compensation optical fiber having a negative dispersion in the signal wavelength band.

10. A line switching device comprising:

a branching section branching signals in a predetermined wavelength band contained in a signal wavelength band from signals propagating through an optical transmission line in an optical communication network; and

a dispersion compensating module according to claim 1, said dispersion compensating module compensating for the dispersion of said optical transmission line, in the predetermined wavelength band containing the signals branched by said branching section.

11. A line switching device according to claim 10, wherein said branching section includes an add drop multiplexer.

12. A line switching device according to claim 10, wherein said branching section includes an optical cross connect.

13. A line switching device according to claim 10, further comprising a control section for controlling a branching function of said branching section and a port switching operation of each of said optical switches in said

dispersion compensating module in a mutually interlocked relation.

14. A dispersion compensating module according to claim 10, wherein the signals branched by said branching section includes a pilot signal indicative of a signal spource which has transmitted the signals,

wherein said line switching device further comprises a receiving section receiving the pilot signal contained in the signals and a control section for controlling a port switching operation in each of said optical switches in said dispersion compensating module on the basis of the pilot signal received by said receiving section.

15. An optical communication system comprising:

a dispersion compensating module according to claim 1; and

a control section for controlling port switching of an optical switch included in said dispersion compensating module, thereby adjusting a dispersion compensation amount for signals passing through said dispersion compensating module.

16. An optical communication system according to claim 15, further comprising an optical transmission line provided between a first station and a second station and constituted by a plurality of lines, and

wherein said control section selects one of said plurality of lines as a signal propagation line from said

first station to said second station when adjusting the dispersion compensation amount in said dispersion compensating module.

5        17. An optical communication system according to claim 16, wherein said control section performs a selection of said signal propagation line and an adjustment of the dispersion compensation amount in said dispersion compensating module.

10       18. An optical communication system according to claim 15, wherein said dispersion compensating module is provided in at least one of said first station, said second station and a repeater provided between said first station and said second station.

15       19. An optical communication system according to claim 15, wherein said optical transmission line includes a ring-type network.

20       20. An optical communication system according claim 15, wherein at least one of signal channels in the signal wavelength band is a signal channel contained in a wavelength range of 1,530 nm to 1,565 nm.

25       21. An optical communication system according to claim 15, wherein at least one of signal channels in the signal wavelength band is a bit rate of 10 Gb/s or more.